UNITED STATES DISTRICT COURT DISTRICT OF MINNESOTA

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

Plaintiffs,

(FIRST) AMENDED COMPLAINT IN CLASS ACTION

v.

Uponor, Inc., successor to Uponor North America, Inc., and Radiant Technology, Inc.,

Defendants.

EXHIBIT A

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF TEXAS HOUSTON DIVISION

UPONOR, INC.

Plaintiff,

Vs.

S

CASE NO. 07-2986

UNIQUE INDUSTRIAL PRODUCT

COMPANY,

Defendant

S

Defendant

PLAINTIFF'S AMENDED COMPLAINT

NOW COMES Plaintiff UPONOR, INC. (hereinafter "UPONOR") and files this Amended Complaint against Defendant UNIQUE INDUSTRIAL PRODUCT COMPANY (hereinafter "UNIQUE") and respectfully shows as follows:

PARTIES

- 1. RTI Piping Systems ("RTI") was a company located at 11 Farber Drive, Bellport, N.Y. 11713. RTI was engaged in the business of supplying/distributing various plumbing products including, but not limited to, brass Fittings and toilet Swivel Nuts.
- 2. At all times relevant, Plaintiff UPONOR was and is a corporation incorporated in Illinois with its principal place of business located at 5925 148th Street West, Apple Valley, Minnesota. UPONOR was and is both a citizen and a resident of Minnesota. UPONOR is engaged in the business of supplying/distributing various plumbing products including, among other products, brass plumbing Fittings as well as toilet Swivel Nuts, and was authorized to conduct business in Texas.

- 3. UPONOR and RTI were related companies. In or about December 2004 UPONOR began receiving deliveries of RTI's inventory of products, including SSC Fittings and toilet Swivel Nuts. In or about December 2004 UPONOR agreed to honor RTI's warranty obligations relating to parts supplied/distributed by RTI, including brass Fittings and Swivel Nuts.
- 4. Upon information and belief, at all times relevant, Defendant UNIQUE was and is a Texas corporation with its principal place of business located at 12600 Cardinal Meadows, Sugarland, Texas, and was acting as a domestic agent, apparent manufacturer, importer, supplier/distributor and marketer of plumbing products including, among other products, ASTM F1807 brass plumbing Fittings and polyacetyl toilet Swivel Nuts. At all times relevant, UNIQUE was doing business in the State of Texas, and was both a citizen and a resident of Texas.

JURISDICTION AND VENUE

- 5. This Court has original jurisdiction of this action pursuant to 28 U.S.C. Section 1332 because there is complete diversity of citizenship between the parties and the amount in controversy exceeds the sum of \$75,000.00, exclusive of interest and costs.
- 6. Venue is proper in this jurisdictional district pursuant to 28 U.S.C. Section 1391(a)(2) and (f)(1) as UNIQUE is doing business in this jurisdictional district.

PRELIMINARY ALLEGATIONS

7. On or about July 31, 2002 RTI began doing business with UNIQUE and submitted a purchase order for brass pex Fittings. In August 2002, in e-mails and telefaxes, RTI required, and UNIQUE agreed, that the brass pex Fittings to be supplied by UNIQUE would have various markings including: F1807, P-PEX and NSF-pw. Subsequent to the August 2002

date UNIQUE was instructed to, and did, mark the Fittings sold to RTI and UPONOR with the additional designation "US-PW".

- 8. The F1807 designation is made pursuant to the American Society of Mechanical Engineers (ASTM) standards which relate, in part, to metal (brass) insert Fittings for use with Pex tubing. Pursuant to sub-paragraph 11.1 of F1807-045 when a product, or product packaging, is marked with the ASTM designation F1807 the product is represented to have been manufactured, tested, inspected and sampled in accordance with F1807 and has been found to meet F1807 requirements.
- 9. ASTM F1807-045 references B283 Specifications for Copper and Copper-Alloy Die Forgings which encompasses the brass Fittings supplied by UNIQUE. The B283 Specifications provide among other points, in paragraph 7 that forgings, including the Fittings supplied by UNIQUE shall conform to the chemical composition requirements set forth in Table 1 attached to B283.
- 10. UNIQUE selected Duksan Metal Co. of Korea to design, engineer and manufacture the Fittings. Neither RTI nor UPONOR participated in the selection of Duksan nor did they have contact with Duksan relating to the means, methods or circumstances regarding the manufacture of the Fittings. The Fittings were delivered by Duksan to UNIQUE.
- 11. On information and belief UNIQUE did not have a representative present at Duksan's facility on a full time basis to monitor the manufacturing process and ensure that the production runs, as opposed to prototype product, was in compliance with ASTM and industry standards.
- 12. Subsequent to its commitment in July 2002 to supply brass Fittings to RTI, UNIQUE agreed to provide RTI and UPONOR with Swivel Nuts.

- 13. UNIQUE chose Duksan to engineer, design and manufacture the Swivel Nuts. Duksan sub-contracted part of the work on the Swivel Nuts. On information and belief UNIQUE never inspected the Swivel Nut sub-contractor's facility, never investigated the qualifications of the sub-contractor and never monitored the sub-contractor's work.
- 14. Neither RTI nor UPONOR knew who the Swivel Nut sub-contractor was, nor how the Swivel Nuts were being manufactured.
- 15. During or before June 2004 UNIQUE was placed on notice by UPONOR of failures of Swivel Nuts, the fact that UNIQUE's competitors' nuts were not failing and that UPONOR was losing business as a result of this situation.
- 16. Subsequent to June 2004, UNIQUE began supplying other Swivel Nuts to UPONOR (the "post June 2004 nuts"). UNIQUE did not monitor or supervise production of the post June 2004 nuts, did not test the post June 2004 nuts before supplying them to UPONOR to determine what degree of porosity was present in the walls of the nuts, nor did UNIQUE examine the thread pattern of the nuts for deficiencies.
- 17. The Swivel Nuts were purchased from UNIQUE, by RTI and UPONOR, with the intent and understanding that those Swivel Nuts would be further distributed by RTI and UPONOR to other entities for installation in residential plumbing systems. During and after the discussions/negotiations relating to the sale of the Swivel Nuts, UNIQUE understood that RTI and UPONOR would be acting as intermediate distributors of the Swivel Nuts and would be passing that product along to wholesalers and end users without any changes to the product.
- 18. During and after the discussions/negotiations relating to the sale of the Swivel Nuts, UNIQUE presented itself to RTI and UPONOR as knowledgeable regarding that product, represented that it was in the business of selling such products, and RTI and UPONOR relied on

UNIQUE's experience and knowledge relating to the Swivel Nuts. Further, UNIQUE agreed to provide goods that were free from defects in workmanship, materials, or design, and which were merchantable and fit for their intended purpose of incorporation into residential plumbing systems.

- 19. Pursuant to the understandings and agreements set forth in paragraphs 17 and 18 above, UNIQUE began shipping the subject Swivel Nuts to RTI and UPONOR.
- 20. Prior to the date on which RTI and UPONOR began purchasing the Swivel Nuts from UNIQUE, RTI and UPONOR had entered into agreements with various wholesalers to supply Swivel Nuts for use in residential plumbing throughout the United States. Subsequent to the date of UNIQUE's sale of the Swivel Nuts to RTI and UPONOR, RTI and UPONOR supplied UNIQUE's Swivel Nuts to other entities, including wholesalers. RTI and UPONOR made no changes or alterations to UNIQUE's Swivel Nuts and simply re-distributed UNIQUE's product in the same condition in which it was supplied by UNIQUE.
- 21. Subsequent to RTI's and UPONOR's distribution of the Swivel Nuts, UPONOR received notice from a builder/contractor, Palm Harbor, as well as individuals that certain of the Swivel Nuts were failing during and after installation in residences.
- 22. At various times, beginning in July 2002, RTI and UPONOR purchased from UNIQUE, pursuant to multiple purchase orders, ASTM Fl807 brass plumbing Fittings ("Fittings") with the intent and understanding that those Fittings would be further distributed by RTI and UPONOR to wholesalers for installation in residential plumbing systems.
- 23. UPONOR's purchases of Fittings from UNIQUE occurred at various times including, but not limited to, the fall of 2004 and were made, pursuant to multiple purchase orders. Sample copies of UPONOR Purchase Orders, relating to the Fittings, issued to UNIQUE

are attached hereto as Exhibit "A." These Fitting Purchase Orders were subject to UPONOR's standard Purchasing Terms and Conditions attached hereto as Exhibit "B."

- 24. During and after the discussions/negotiations relating to the sale of the Fittings UNIQUE understood that RTI and UPONOR would be acting as intermediate distributors of the Fittings and would be passing that product along to wholesalers and end users without any changes to the product.
- 25. During and after the discussions/negotiations relating to the sale of the Fittings, UNIQUE presented itself to RTI and UPONOR as knowledgeable regarding that product, represented that it was in the business of selling such products, and RTI and UPONOR relied on UNIQUE's experience and knowledge relating to the Fittings. Further, UNIQUE agreed to provide goods that were free from defects in workmanship, materials, and design, and which were merchantable and fit for their intended purpose of incorporation into residential plumbing systems.
- 26. Prior to the date on which RTI and UPONOR purchased the Fittings from UNIQUE, RTI and UPONOR entered into separate agreements with various entities to supply them with the Fittings, including wholesalers, plumbers as well as builders/contractors who installed them into residences throughout the United States. RTI and UPONOR made no changes or alterations to UNIQUE's Fittings and simply re-distributed UNIQUE's product in the same condition in which it was supplied by UNIQUE.
- 27. Pursuant to Paragraph 11 of the Terms and Conditions applicable to the Fitting Purchase Orders, UNIQUE agreed to indemnify UPONOR and "hold and save [UPONOR] from and against any and all claims, demands, liabilities, losses or expenses of whatsoever in kind and nature which [UPONOR] shall or may at any time sustain or incur by reason of, in consequence

of, or arising out of the manufacture, sale or delivery by [UNIQUE] of the goods and/or services described in this Purchase Order."

- 28. Pursuant to Paragraph 31 (Warranty Specifications) of the Terms and Conditions for the Fitting Purchase Orders, UNIQUE further "expressly warrant[ed that all goods and/or services, and workmanship with respect to the goods, covered by the Purchase Order or other description, drawings, specifications or samples furnished by [UNIQUE] will be in exact accordance with such Purchase Order, description, drawings, specifications or samples and free from defects in design (except to the extent such defective design is attributable to [UPONOR]), materials and workmanship and will be merchantable and fit for a particular purpose(s)."
- 29. Subsequent to UPONOR purchasing Swivel Nuts from UNIQUE, Palm Harbor and individuals informed UPONOR of multiple Swivel Nut failures, demanded reimbursement from UPONOR for the damages they claim to have sustained as a result of the defective Swivel Nuts and also demanded replacement of all UNIQUE Swivel Nuts contained in the approximately 5,000 Palm Harbor homes in which UNIQUE's Swivel Nuts had been installed.
- 30. Prior to August 24, 2006, UPONOR began receiving notices of failures of certain Fittings supplied by UNIQUE which had been incorporated into plumbing systems in various residential properties, which failures resulted in water damage.
- 31. On or about August 24, 2006 representatives of UPONOR met with representatives of UNIQUE to discuss the Swivel Nut and Fitting failures.
- 32. At the August 24, 2006 meeting UNIQUE agreed "that it will be responsible for any claims arising out of defective product." A copy of the August 28, 2006 e-mail from UNIQUE to UPONOR confirming that agreement is attached hereto as Exhibit "C".

- 33. At the August 24, 2006 meeting UNIQUE agreed that in exchange for UPONOR agreeing to "take the remaining inventory" UNIQUE "will take responsibility for these parts regarding quality and conformity to specifications." See Exhibit "C".
- 34. At the August 24, 2006 meeting UNIQUE agreed with respect to the Swivel Nuts, to pay for 50% of the then existing claims. It was also agreed at the August 24, 2006 meeting that an inquiry would be made of Palm Harbor related to the cost of pro-actively replacing all of the UNIQUE supplied Swivel Nuts. See Exhibit "C".
- 35. In an e-mail dated September 15, 2006, from UNIQUE to UPONOR, UNIQUE stated that "[a]s agreed during our meeting you will take our inventory and in return we will take care of the existing claims plus stand behind any future claims." A copy of the September 15, 2006 e-mail is attached hereto as Exhibit "D".
- 36. In the September 15, 2006 e-mail, UNIQUE stated that "our product meets all the requirements of F1807 except the lead which is a little lower. It is for this that we are standing behind our product in case there are any claims etc.". See Exhibit "D".
- 37. In an e-mail of September 11, 2006, regarding the current inventory of product in stock in Houston, currently "on water" and ready for shipment from "overseas", UNIQUE stated that ".. should there be any non-conforming product, UNIQUE will issue an immediate credit to UPONOR". See the e-mail of Hetal Bhavsar of September 11, 2006 attached hereto as Exhibit "E".
- 38. On or about October 4, 2006 UPONOR released Purchase Order #825548 covering UNIQUE inventory. UNIQUE agreed to the terms of the offer relating to Purchase Order #825548. See Purchase Order #825548 attached hereto as Exhibit "F" and the e-mail from UNIQUE (Jay Milani) dated October 9, 2006 attached hereto as Exhibit "G".

- 39. In the e-mail of October 9, 2006 Mr. Milani states that UNIQUE will "... cooperate fully and take care of claims and put this issue behind us." See Exhibit "G".
- 40. Purchase Order #825548 provides that acceptance of the product listed on the Purchase Order "is subject to the attached UPONOR, Inc. terms and conditions and the product meeting UPONOR's quality testing, F1807 standards and all applicable represented standards." See Exhibit "F". See Exhibit "B" for the terms and conditions referred to in Exhibit "F".
- 41. Pursuant to Paragraph 11 of the Terms and Conditions applicable to the UPONOR Purchase Order UNIQUE agreed to indemnify UPONOR and "hold and save [UPONOR] from and against any and all claims, demands, liabilities, losses or expenses of whatsoever in kind and nature which [UPONOR] shall or may at any time sustain or incur by reason of, in consequence of, or arising out of the manufacture, sale or delivery by [UNIQUE] of the goods and/or services described in this Purchase Order."
- 42. Pursuant to Paragraph 31 (Warranty Specifications) of the Terms and Conditions UNIQUE further "expressly warranted that all goods and/or services, and workmanship with respect to the goods, covered by the Purchase Order or other description, drawings, specifications or samples furnished by [UNIQUE] will be in exact accordance with such Purchase Order, description, drawings, specifications or samples and free from defects in design (except to the extent such defective design is attributable to [UPONOR]), materials and workmanship and will be merchantable and fit for a particular purpose(s)."
- 43. In August of 2006, UPONOR was in contact with various individuals and entities regarding the failures of the Fittings and Swivel Nuts that UNIQUE sold to UPONOR and, as a result of the failures, the Fittings and Swivel Nuts were removed from the inventory of those individuals and entities and returned to UPONOR.

- 44. UNIQUE's Fittings were supplied through a distribution chain to end users, including a builder named Ryan Homes, a subsidiary of NVR, Inc. Ryan Homes had discovered that UNIQUE's Fittings installed in residences constructed by it were failing, and made a demand that the Fittings be replaced.
- Ryan Homes has claimed that it incurred damages resulting from Fitting failures.

 These damages related to the costs and expenses associated with the removal and replacement of the Fittings installed in select residences in Virginia.
- 46. On or about November 29, 2006 UPONOR, both orally and in writing, put UNIQUE on notice of claims that had been made by Ryan Homes regarding the replacement of ASTM F1807 Fittings supplied by UNIQUE and the demand by Palm Harbor Homes for replacement of Swivel Nuts supplied by UNIQUE. A copy of the November 29, 2006 e-mail of Sheila King of UPONOR to Hetal Bhavsar of UNIQUE is attached hereto as Exhibit "H". UNIQUE has refused to pay for the replacement of the Fittings and Swivel Nuts.
- 47. UPONOR has paid the damages claimed by Ryan Homes and has presented a claim to UNIQUE pursuant to the agreement UNIQUE made with UPONOR for reimbursement of the sums that UPONOR paid as a result of the failure of UNIQUE's Fittings. UNIQUE has failed to make reimbursement to UPONOR for these sums.
- 48. UPONOR has tendered all known manufacturing defect related claims for Fittings and Swivel Nuts to UNIQUE relative to costs that it has incurred thus far and/or will incur as a result of the defective Fittings and Swivel Nuts that UNIQUE sold to RTI and UPONOR.
- 49. Palm Harbor has also made demand upon UPONOR for all costs and expenses associated with the removal and replacement of Swivel Nuts installed in its homes throughout

the United States. UPONOR, in turn, presented a claim to UNIQUE for the sums being sought by Palm Harbor. UNIQUE has failed to honor and pay UPONOR's claim.

- 50. To date, UPONOR has paid in excess of \$75,000 in connection with claims by Palm Harbor relating to Swivel Nuts, over \$75,000 to Ryan Homes/NVR in connection with its claims for defective Fittings and over \$75,000 to third parties for payment of swivel nut and fitting claims despite the fact that UPONOR is an innocent seller which did not manufacture the Fittings and Swivel Nuts and made no alterations or modifications to the products supplied by UNIQUE.
- 51. Since mid-2006, UPONOR has sought, with no success, reimbursement and/or tendered claims to UNIQUE relative to Fitting and Swivel Nut failures.
- 52. UNIQUE has failed to accept claims and/or reimburse UPONOR for payments made relative to Fittings and Swivel Nut failures.
- 53. At present, UPONOR has sustained damages in the form of honoring warranty claims, related costs and expenses incurred as a result of defects and deficiencies in UNIQUE products, as well as the complained of acts and/or omissions of UNIQUE. In addition, UPONOR may lose future business and profits from various entities as a result of the deficiencies in the Fittings and Swivel Nuts supplied by UNIQUE.

COUNT I

(Breach of Contract)

54. UPONOR re-alleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. Pursuant to the language of the written e-mails

referenced herein and exchanged between UNIQUE and UPONOR, UNIQUE agreed to take responsibility for all claims, present and future relating to products it had sold UPONOR.

- 55. Pursuant to the Standard Terms and Conditions governing the purchase orders, UNIQUE agreed to indemnify UPONOR in connection with any claims or demands arising out of the products supplied to UPONOR by UNIQUE.
- 56. In exchange for UNIQUE's promise to stand behind claims made relating to its products, UPONOR agreed to take all of the UNIQUE inventory identified on Purchase Order 825548 that met the criteria specified/referenced on the Purchase Order. UNIQUE agreed to these terms.
- 57. Pursuant to the communications between UNIQUE and RTI in July and August 2002, UNIQUE agreed to supply Fittings that complied with ASTM F1807 standards.
- 58. Pursuant to the language of the purchase orders exchanged between UPONOR and UNIQUE including, but not limited to, Purchase Order #825548 and the terms and conditions incorporated therein, UNIQUE agreed to supply and/or manufacture products which were fit for their intended purpose, merchantable and reasonable for consumer installations.
- 59. As domestic agent for a foreign manufacturer of the products at issue, and as a distributor of the products involved in this matter, UNIQUE held itself out as being knowledgeable, skilled and competent in the business of manufacturing and supplying Fittings and Swivel Nuts and represented that the Fittings and Swivel Nuts would be manufactured in a good and workmanlike manner, and fit for their intended purpose.
- 60. Pursuant to the Standard Terms and Conditions governing the purchase orders exchanged between UPONOR and UNIQUE including, but not limited to, Purchase Order #825548, as well as UNIQUE's e-mails to UPONOR, UNIQUE agreed to indemnify UPONOR

in connection with any claims or demands arising out of the products supplied to UPONOR or RTI by UNIQUE.

- 61. UNIQUE breached its agreement with UPONOR in one or more of the following respects because UNIQUE:
 - a) defectively manufactured the subject Fittings and Swivel Nuts;
 - b) failed to take reasonable steps to ensure that the Fittings would not be subject or prone to fracturing post-manufacture in expected and intended residential use;
 - c) failed to take reasonable steps to ensure that the Swivel Nuts would not be subject or prone to fracturing post-manufacture in expected and intended residential use;
 - d) failed to properly test, inspect and evaluate the Fittings and Swivel Nuts prior to distributing those products to determine that they were suitable and fit for installation in residential plumbing systems;
 - e) supplied RTI and UPONOR with Swivel Nuts and Fittings that were not merchantable, or suited for their reasonable, expected and intended use in residential plumbing systems, and which were not free from defects in materials, design and workmanship;
 - f) failed, despite repeated demands by UPONOR, to indemnify UPONOR for the costs and expenses incurred in connection with failures of products supplied by UNIQUE to UPONOR, which products have been injected into the stream of commerce by UNIQUE;
 - g) failed to supply Fittings that complied with ASTM standard F1807 and the chemical composition requirements specified in attachments thereto;
 - h) failed to abide by its agreement to "stand behind" and pay for present and future claims relating to products it sold; and
 - i) otherwise breached its Agreements with RTI and UPONOR.
- 62. At all times relevant, UPONOR fulfilled all obligations and/or responsibilities that it had and which arose out of the agreements with UNIQUE for the products at issue.

63. As a direct and proximate result of the aforementioned breaches of the Agreements by UNIQUE, UPONOR has sustained damages within the jurisdictional limits of this Court.

COUNT II

(Breach of Express Warranty of Merchantability)

- 64. UPONOR re-alleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. Pursuant to UNIQUE's agreement to produce and supply Fittings that complied with ASTM F1807 standards, UNIQUE's agreement to manufacture and supply Swivel Nuts that conform to industry standards, and under the Terms and Conditions governing the Fitting and Swivel Nuts under UPONOR purchase orders, UNIQUE warranted that the design and the manufacture of the subject Fittings and Swivel Nuts was in accordance with recognized and sound engineering principles, as well as industry standards and that those products were in a good and merchantable condition such that the Fittings and Swivel Nuts were reasonably fit for the ordinary purposes for which they were intended to be used.
- 65. The subject Fittings supplied by UNIQUE were not in a good and merchantable condition upon receipt by UPONOR since they were susceptible to failure due to fracturing from various causes including poor microstructure, pre-existing cracks and deficient chemical composition.
- 66. The subject Swivel Nuts supplied by UNIQUE were not in a good and merchantable condition upon receipt by UPONOR since they had excessive porosity in the walls of the nuts and the threads were not properly manufactured.

67. As a direct and proximate result of the aforementioned breach of express warranty by UNIQUE, UPONOR sustained damages.

COUNT III

(Breach of Implied Warranty of Merchantability)

- Complaint as though fully set forth herein. At all times relevant, and in accordance with the provisions of Section 2.314(a) of the Texas Business and Commerce Code UNIQUE, as the apparent manufacturer of the goods/products at issue, and being a merchant/seller with respect to those products/goods, impliedly warranted that the design and manufacture of the subject Fittings and Swivel Nuts was done in a fashion that left those products in a good and merchantable condition so that the Fittings and Swivel Nuts were reasonably fit for the ordinary purposes for which they were intended and would pass without objection in the trade.
- 69. The subject Fittings and Swivel Nuts supplied by UNIQUE were not in a good and merchantable condition when they were supplied to UPONOR, were not fit for the ordinary purposes for which such goods are used, and would not pass without objection in the trade as evidenced by multiple failures of the goods when put to their ordinary and intended uses.
- 70. UPONOR duly and reasonably relied on the skill and judgment of UNIQUE as the apparent manufacturer of the goods, as a merchant/seller of the goods and as a marketer of the goods, in connection with the design, manufacture and supply of the Fittings and Swivel Nuts which were to be merchantable when supplied to UPONOR.
- 71. As a direct and proximate result of the aforementioned breach of implied warranty by UNIQUE, UPONOR has sustained damages.

COUNT IV

(Breach of Implied Warranty of Fitness for a Particular Purpose)

- 72. UPONOR re-alleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. At all times relevant, and in accordance with the relevant provisions of Section 2.315 of the Texas Business and Commercial Code, UNIQUE was a seller/merchant with respect to the goods at issue, had reason to know of the particular purpose for which the goods were needed, and had reason to know that UPONOR was relying on UNIQUE's skill or judgment to select or furnish suitable goods, thereby giving an implied warranty that the subject Fittings and Swivel Nuts were fit for their particular purpose and/or use and that the Fittings and Swivel Nuts were suitable to be incorporation into residential plumbing systems under expected and anticipated conditions.
- 73. Notwithstanding the foregoing warranty, the Fittings supplied by UNIQUE were not fit for their particular purpose or use as they experienced multiple failures for various reasons including, but not limited to, their poor microstructure and pre-existing cracks.
- 74. The Swivel Nuts supplied by UNIQUE were not fit for the particular purpose or use for various reasons including, but not limited to, excessive porosity and defective machining of their threads.
- 75. UPONOR and prior to it RTI, duly and reasonably relied on the skill and judgment of UNIQUE, as the apparent manufacturer, seller and marketer of the goods, to supply Fittings and Swivel Nuts which were fit for their intended and particular purpose and use.
- 76. As a direct and proximate result of the unfit condition of the subject Fittings and Swivel Nuts, multiple failures of those products occurred, causing damage to UPONOR.

COUNT V

(Common Law Indemnity)

- 77. UPONOR realleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. UNIQUE was the apparent manufacturer of the Fittings and Swivel Nuts involved in this matter and so held itself out to companies in the market for such products, including RTI and UPONOR.
- 78. On information and belief, UNIQUE was the importer, distributor and marketer of the Fittings and Swivel Nuts involved in this matter, and UNIQUE was the entity that placed the Fittings and Swivel Nuts into the stream of commerce causing UPONOR to sustain damages when those products failed.
- 79. Neither RTI nor UPONOR made any changes or alterations to the Fittings and Swivel Nuts at issue in this matter, and was an innocent retailer in the chain of distribution of the Fittings and Swivel Nuts.
- 80. As a result of multiple failures of the Fittings and Swivel Nuts, claims for damages have been made and directed to UPONOR as a "down stream" participant in the chain of distribution of the goods at issue. Notwithstanding its role as an innocent retailer in the chain of distribution, UPONOR has incurred expenses in connection with such claims including, but not limited to, payment of property damage claims due to the failure of the UNIQUE products.
- 81. UPONOR has made demand upon UNIQUE for reimbursement of sums spent in connection with these claims and UNIQUE has failed to honor UPONOR's demand.
- 82. As a result of their relative positions in connection with the manufacture, sale and distribution of the products at issue, UPONOR is entitled to be indemnified by UNIQUE for

damages it has incurred as a result of the failures of Fittings and Swivel Nuts placed into the stream of commerce by UNIQUE.

COUNT VI

(Breach of Express Indemnity)

- 83. UPONOR re-alleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. Under the terms of the e-mails exchanged between UNIQUE and UPONOR, UNIQUE agreed to pay for claims relating to failures of Swivel Nuts and Fittings. Furthermore, pursuant to the terms and conditions which form a part of and govern the Purchase Orders exchanged by UPONOR and UNIQUE, UNIQUE agreed to indemnify UPONOR for any and all claims, liabilities, losses or expenses arising out of the sale of the Fittings and Swivel Nuts.
- 84. UPONOR sold the Fittings and Swivel Nuts to various entities, and as a result of the failure of those products, UPONOR has received claims, and has incurred liabilities, losses, costs and expenses.
- Pursuant to the indemnity obligations referred to above, UPONOR tendered all claims, liabilities, losses, costs and expenses to UNIQUE.
- 86. To date, UNIQUE has failed and refused to reimburse UPONOR, resulting in UPONOR sustaining damages.

COUNT VII

(Strict Products Liability — Defective Product)

87. UPONOR re-alleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. At all times relevant, UNIQUE was engaged in the

business of selling, marketing, and distributing the Fittings and Swivel Nuts involved in this matter, and it was expected that the Fittings and Swivel Nuts would reach the ultimate user or consumer without substantial change in the condition in which those products were sold. The Fittings and Swivel Nuts sold, marketed and distributed by UNIQUE did reach the ultimate user or consumer in the condition in which those products were sold by UNIQUE.

- 88. The Fittings and Swivel Nuts involved in this matter were defective and unreasonably dangerous at the time they were sold by UNIQUE as the construction and quality of the Fittings and Swivel Nuts deviated from the specifications and/or planned output of those products in various ways including, but not limited to, failing to comply with ASTM F1807 standards including chemical composition, poor micro- structure and preexisting cracks in the Fittings and preexisting cracks, excessive porosity and deficiencies in the machining of the threads in the Swivel Nuts, rendering both types of products unreasonably dangerous. These defects existed at the time the Fittings and Swivel Nuts left the possession of UNIQUE and caused UPONOR to sustain damages as a result of the failures of the Fittings and Swivel Nuts.
- 89. As a direct and proximate result of the defective and unreasonably dangerous condition of the Fittings and Swivel Nuts, those products failed, causing water damage to residences following the installation of those products as part of the residential plumbing systems, and requiring the removal of those products due to a heightened failure potential.
- 90. As a direct and proximate result of the defective and unreasonably dangerous condition of the Fittings and Swivel Nuts, multiple failures of those products occurred, causing UPONOR to sustain damages, and UPONOR is likely to continue to sustain damages in the future.

COUNT VIII

(Negligence)

- 91. UPONOR re-alleges and incorporates Paragraphs 1 through 53 of the Amended Complaint as though fully set forth herein. UNIQUE, as the apparent manufacturer, seller, distributor and marketer of the products involved in this matter owed a duty to UPONOR to provide it with products that were merchantable, fit for their intended and foreseeable purposes/uses and which were manufactured in accordance with reasonable and recognized industry standards.
- 92. On information and belief, on and prior to August 24, 2006, UNIQUE knew of problems with the type of pex Fittings supplied by it to RTI and UPONOR and prior to that date had changed the style of pex Fittings supplied to competitors of UPONOR, but failed to notify UPONOR or make a similar change relating to product being supplied to UPONOR.
- 93. UNIQUE breached its duty to UPONOR in connection with the Fittings and Swivel Nuts it sold to UPONOR in one or more of the following ways:
 - a) defectively manufactured the subject Fittings and Swivel Nuts in various ways including, but not limited to, creating the presence of poor microstructure and cracks, excessive porosity and deficient thread structured patterns;
 - b) distributed/sold Fittings and Swivel Nuts which were cracked, structurally unsound, not fit for ordinary use in residential plumbing system, and which were not fit for their intended purposes;
 - c) failed to take reasonable steps to ensure that the Fittings would not be subject or prone to fracturing post manufacture in expected and intended residential use;

- d) failed to take reasonable steps to ensure that the Swivel Nuts would not be subject or prone to fracturing post manufacture in expected and intended residential use;
- e) failed to properly test, inspect and evaluate the Fittings and Swivel Nuts prior to distributing those products to determine that they were suitable and fit for installation in residential plumbing systems.
- f) continued to distribute/sell Swivel Nuts and Fittings that were not suitable for their reasonable, expected and intended use in residential plumbing systems after it knew or in the exercise of reasonable care should have know of the deficiencies or defects in those products;
- g) failed to monitor the manufacturing process to ensure that there was not excessive porosity in the walls of the Swivel Nuts;
- h) failed to monitor the production of the Fittings to ensure that the proper chemical composition was present and that the machining and washing process was correctly done;
- failed to advise UPONOR that it had made changes to the manufacturing and/or design of the Fittings sold to certain of UPONOR's competitors at the same time UNIQUE continued to sell those Fittings to UPONOR; and
- j) otherwise acted in a careless and negligent fashion in connection with the distribution and sale of the Fittings and Swivel Nuts.
- 94. As a direct and proximate result of the negligent acts and omissions of UNIQUE with respect to the Fittings and Swivel Nuts, those products failed, causing water damage to residences following the installation of those products as part of residential plumbing systems, and also caused UPONOR damage by making it necessary to pro-actively replace Fittings and Swivel Nuts.
- 95. As a direct and proximate result of the negligent acts and omissions of UNIQUE, which have caused or contributed to the multiple failures of the products involved in this matter, UPONOR has sustained damages and is likely to continue to sustain damages in the future.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff UPONOR, INC. respectfully requests that Defendant be cited to appear and that this Court enter judgment for Plaintiff and against Defendant UNIQUE INDUSTRIAL PRODUCT COMPANY in an amount to be determined by the trier of fact, together with interest, costs, and attorney's fees. Plaintiff also respectfully requests any other and further relief as the Court deems just and equitable to which Plaintiff may be entitled.

Respectfully submitted,

SHANNON, GRACEY, RATLIFF & MILLER, L.L.P.

By: Noward & ficher

Joseph R. Little

State Bar No. 00784483

Southern District of Texas Bar No. 15972

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Houston, Texas 77010

(713) 255-4700 - Telephone

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Attorney in Charge for Plaintiff Fisher Kanaris, P.C. 200 S. Wacker Drive Floor Chicago, Illinois 60606

(312) 474-1400 - Telephone (312) 474-1410 - Facsimile

Of Counsel for Plaintiff

UNITED STATES DISTRICT COURT DISTRICT OF MINNESOTA

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

Plaintiffs,

(FIRST) AMENDED COMPLAINT IN CLASS ACTION

v.

Uponor, Inc., successor to Uponor North America, Inc., and Radiant Technology, Inc.,

Defendants.

EXHIBIT B



METALLURGICAL TECHNOLOGIES, Inc., P.A.

Engineering, Testing & Analysis - Scanning Electron Microscopy

160 Bevan Drive Mooresville, NC 28115 • Phone 704-663-5108 Fax 704-662-0898 • www.met-tech.com

October 31, 2008

Mr. Howard Lieber, FISHER KANARIS, PC 200 South Wacker Dr., 22nd Floor Chicago, IL 60606 (312)474-1415

Re: Analysis of Unique Plastic Swivel Nuts and Brass Plumbing Fittings

Dear Mr. Lieber,

Per your request, I am writing to summarize my experience with plastic swivel nuts and brass insert plumbing fittings distributed by Unique Industrial Product Company.

I am currently employed by Metallurgical Technologies, Inc. as a senior materials engineer in Mooresville, North Carolina. I have approximately 14 years of experience in fracture interpretation, root-cause failure analysis, investigative chemistry, and material analysis as indicated on the enclosed curriculum vitae. In December 1993, I graduated magna cum laude with a B.S.E. degree in Materials Science and Engineering from Arizona State University.

From July 2002 through October 2007, I was employed by Uponor North America (formerly Uponor Wirsbo) as Manager of Material Analysis. In that capacity, I was responsible for the creation and management of an analytical services laboratory dedicated to root cause failure analysis, investigative chemistry, and materials engineering support for Uponor North America. During my employment with Uponor, I personally evaluated numerous new and field-returned plastic swivel nuts and brass insert plumbing fittings supplied by various companies, including those distributed by Unique Industrial Product Company. Clusters of failures had occurred, over a relatively short time period, in swivel nuts and brass fittings provided by Unique. All of the failed brass fittings associated with this analysis were labeled "F1807", and all exhibited a "cNSF uspw" demarcation.

Summary of Conclusions:

After extensive evaluation of the new and failed components, it is my opinion that the swivel nuts and brass insert plumbing fittings failed due to manufacturing defects. More specifically, it is my opinion based on a reasonable degree of engineering certainty that:

1. The plastic swivel nuts fractured due to: a) low cycle fatigue initiating at areas of stress concentration in the threads and b) due to excessive gas



Analysis of Unique Plastic Swivel Nuts and Brass Plumbing Fittings Page 2 of 6

porosity in the walls of the nuts. The gas porosity consumed a substantial portion of the wall thickness, effectively weakening the nut. This allowed fatigue cracks to initiate in the threaded region of the nut where they would not have otherwise initiated. The weakened parts were made even more vulnerable to fatigue crack initiation by stress concentrations in the threaded region resulting from non-uniform thread faces, undercutting in the thread roots, and sharp corners associated with a square thread root geometry. All of these product deficiencies (porosity, non-uniform thread faces, undercutting in the thread roots, and square thread root geometry) were indicative of a poorly controlled molding process and/or mold design.

- 2. Laboratory testing of new, unused swivel nuts from Generations I, II, and III revealed similar defects which created a significant probability that these components would fail prematurely if placed into service. Uponor could not have sold these components in good conscience knowing that they would not reasonably be expected to perform as intended. Uponor acted responsibly and with integrity by rejecting the defective swivel nuts.
- 3. The brass insert fittings fractured due to stress corrosion cracking resulting from multiple factors including the combined effects of excessive residual stress in the brass material (attributed to forging and machining of the fittings without proper stress relief), coupled with an incompatible chemical introduced during the manufacturing process. Furthermore, testing performed by companies retained by both Uponor and Unique revealed that many of the fittings that fractured during service did not conform to the chemical requirements of ASTM F1807.
- 4. Evidence of stress corrosion cracking was identified in new, unused fittings that were understood to have been manufactured during approximately the same time frame as the failed fittings. Many of these fittings, which were retrieved from plumbing distributor's shelves in Minnesota where a significant number of brass fitting failures had occurred, were still sealed in their original packaging from Unique Industrial Product Company when I received them for analysis.
- 5. Laboratory testing of new, unused brass insert fittings revealed that a significant amount of Uponor's existing inventory of Unique brass insert fittings exhibited an alloy chemistry that did not conform to the requirements of ASTM F1807. For these fittings to be used with PEX tubing for potable water distribution, the fittings were required to conform to ASTM F1807. Thus, Uponor could not sell these components knowing that the alloy chemistry was not in compliance, particularly given that many of the fittings that failed during service also exhibited a non-conforming alloy chemistry. Uponor acted responsibly and with integrity by rejecting the non-conforming brass insert fittings.

Analysis of Unique Plastic Swivel Nuts and Brass Plumbing Fittings Page 3 of 6

6. Opinions expressed by Dr. Charles Hayes in a reported provided by Unique Industrial Product Company are inaccurate, ill-supported, and in direct contradiction to data presented in the Hayes' report.

Evaluation of Plastic Swivel Nuts and Brass Insert Fittings

Plastic Swivel Nuts

Detailed laboratory testing of field-returned plastic swivel adaptors revealed that the swivel nuts fractured due to a fatigue fracture mechanism resulting from manufacturing defects in the molded swivel nut. Specifically, the failures were attributed to excessive porosity and poorly molded threads, which significantly weakened the parts and provided stress concentrations that caused the cracks to fail by fatigue. In some cases, the porosity existed as clusters more than 0.5-inches long. The swivel adaptors were evaluated by visual inspection, stereo microscopy, metallography, radiography, Fourier transform infrared spectrometry, scanning electron microscopy, differential scanning calorimetry, and energy dispersive x-ray spectroscopy.

Radiography and metallography performed on multiple lots of new, unused swivel nuts (Generations I, II, and III) revealed porosity and/or poorly molded threads, similar to what was observed in previously evaluated field failures. Given that the new swivel nuts exhibited manufacturing defects that were virtually identical to defects that caused the field-returned product to fail, I concluded that the new swivel adaptors would be expected to also fail prematurely in a typical service environment, and that they should not be installed.

Multiple sets of "Generation II" and "Generation III" swivel nuts were evaluated in an effort to determine whether the manufacturing defects had been corrected and whether the nuts were suitable for their intended application. Laboratory testing revealed similar manufacturing defects (porosity and/or poorly molded threads) in each generation of new product evaluated. This indicated that the new production swivel nuts were also unsuitable for the intended application, and that they also would likely fail prematurely if placed into service.

Since the porosity and irregular thread geometries observed in these components resulted from poorly controlled manufacturing processes rather than from a material deficiency, it was not surprising that 1) similar defects were observed in both nylon and polyacetyl production swivel, and 2) the nylon Generation III production swivel nuts exhibited porosity that was *not* observed in a previously-evaluated set of five nylon prototype swivel nuts. Comparative analysis of similar nylon swivel nuts manufactured by Marshall Brass revealed little or no porosity and uniform thread geometries that were less conducive to fatigue crack initiation. This further indicated that the defects noted in the Unique swivel nuts resulted from poorly controlled manufacturing processes rather than from a material deficiency.

Analysis of Unique Plastic Swivel Nuts and Brass Plumbing Fittings Page 4 of 6

An engineering drawing representing the nylon swivel nut to be provided by Unique showed a fully intact wall with no indication that some level of discernible porosity would be allowed in the swivel nut. Further, the engineering drawing contained no detail regarding the thread root geometry, and it included no indication that undercutting or non-uniform thread faces would be allowed.

In my opinion, Unique Industrial Product Company did not exercise reasonable care to insure that the swivel nuts they distributed to Uponor were free of manufacturing defects. The gross porosity that weakened these swivel nuts and caused them to fail could have been detected by simply weighing production samples. No special equipment or expertise was required to detect these defects, as the porosity was often visible to the unaided eye if the swivel nuts were visually inspected under bright lighting.

Uponor could not sell the Generation II and III production swivel nuts, knowing that these components were unsuitable for the intended application, were not in compliance with industry standards, and that there was a significant probability that the nuts would fail prematurely during service. It was appropriate for Uponor to reject and quarantine the defective swivel nuts received from Unique.

Brass Plumbing Fittings:

Detailed laboratory testing of failed brass insert fittings revealed fracture features consistent with transgranular stress corrosion cracking initiating at the interior, machined surface of the fittings. These fractures resulted from multiple factors, including the combined effects of excessive residual stress in the brass material (attributed to forging and machining of the fittings without proper stress relief), coupled with an incompatible chemical environment and variable metallurgical composition. The failed brass fittings were evaluated by visual inspection, stereo microscopy, metallography, scanning electron microscopy, energy dispersive x-ray spectroscopy, and optical emissions spectrometry.

Unusually pronounced, atypical machining marks were noted at the interior surfaces of the brass fittings adjacent to the separation fractures. The brass material surrounding these machining marks exhibited evidence of heat tinting. Each fracture initiated at the interior surface of the machined outlet, and each fracture exhibited extensive oxidation and corrosion. Metallographic cross-sections through representative fractures revealed a predominantly transgranular fracture morphology, with some evidence of secondary crack branching. When viewed in cross-section, the fractures and crack branches were found to be outlined by corrosion product, indicating that corrosion played a key role in crack propagation. These fracture characteristics were indicative of a stress corrosion cracking fracture mechanism as discussed above.

Analysis of Unique Plastic Swivel Nuts and Brass Plumbing Fittings Page 5 of 6

Given the following facts:

- 1. Some brass fittings failed in a little as one to two weeks after installation in a typical potable water environment.
- 2. One brass fitting reportedly fractured during installation, before ever coming into contact with water.
- Clusters of fitting failures occurred in multiple regions of the US (representing a variety of installers and a variety of water chemistries) within a narrowly defined time period, in an application where no significant failures had previously occurred.

It is my opinion to a reasonable degree of engineering certainty that the stress corrosion cracking experienced by these fittings occurred due to causes associated with the manufacturing process. New brass insert fittings retrieved from the shelves of distributors in Minnesota, where a significant number of brass fitting failures had occurred, were analyzed to determine if cracks were present. Metallographic cross-sections and scanning electron microscopy revealed small cracks at the interior machined surfaces of multiple new brass fittings that had never been installed. Many of these cracked fittings were still sealed in their original packaging from Unique Industrial Product Company when received for analysis.

Chemical analyses performed by Twin City Testing using optical emissions spectrometry revealed that a significant number of failed fittings, and a significant amount of Uponor's existing inventory of Unique brass insert fittings, exhibited an alloy chemistry that did not conform to the requirements of ASTM F1807. Chemical analyses performed by A and M Technical Services Laboratories, Inc. and SHIVA Laboratories at the request of Unique Industrial Product Company also revealed that the brass chemistry did not conform to the requirements of ASTM F1807.

The non-conforming alloy chemistry rendered Uponor's brass fitting inventory unsuitable for the intended application and was an exacerbating factor to the failure mode. Uponor could not sell these brass fittings knowing that the alloy chemistry was not in compliance with ASTM F1807 and that there was a significant probability that the brass fittings would fail prematurely during service. The brass fittings provided by Unique exhibited clear indication of inferior quality and were inconsistent with industry standards. Therefore, it was appropriate for Uponor to reject and quarantine the brass fittings received from Unique.

Analysis of Unique Plastic Swivel Nuts and Brass Plumbing Fittings Page 6 of 6

Documents Reviewed or Relied Upon for the Purpose of this Analysis:

- Various reports, supporting data, photos, and e-mail correspondence generated in association with this analysis during my employment at Uponor
- Swivel nut engineering drawing provided by Unique
- · Chemical analysis reports produced by Twin City Testing
- Chemical analysis data produced by SHIVA Laboratories at the request of Unique Industrial Product Company
- Chemical analysis data produced by A and M Technical Services, Inc. at the request of Unique Industrial Product Company
- Radiographic test reports produced by Twin City Testing
- ASTM Standard F1807, "Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polylethylene (PEX) Tubing."
- ASTM Specification B16 for machined copper alloy UNS C360000
- ASTM Specification B283 for forged brass alloys UNS C37700 or UNS C36500
- * ASM International, ASM Specialty Handbook for Copper and Copper Alloys, Edited by J.R. Davis of Davis and Associates, © 2001.
- ASM International, ASM Metals Handbook, Volume 11, Failure Analysis and Prevention, 1986 and 2002.
- Jones, Denny A., Principals and Prevention of Corrosion, New York, Macmillan Publishing Company, 1992,
- Conlangelo, V. J. and Heiser, F. A. Analysis of Metallurgical Failures Second Edition. New York, John Wiley & Sons, 1987.
- Dr. Charles Hayes, "Brass Fittings for Water Distribution", reported prepared for Unique Industrial Product Company, January 2007.

Prepared by:

Cynthin L. Smith

Senior Materials Engineer

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF TEXAS HOUSTON DIVISION

UPONOR, INC.,
Plaintiff/Counter-Defendant,

§ CIVIL ACTION NO. H-07-2986

UNIQUE INDUSTRIAL PRODUCT COMPANY,

٧.

Defendant/Counter-Plaintiff.

ALEHDAVIT OF GYATTHA L. SMITH

The undersigned, GYNTHIA L. SMITH, being first duly swom on outh deposes and states that if called as a witness in this matter I would testify as follows:

- I have personal knowledge regarding the matters set forth herein.
- Since October, 2007 I have been employed with Metallurgical Technologies, Inc. (MTI) as a Senior Materials Engineer and Technical Manager. In that capacity, I perform and direct failure analysis, forensic chemistry, material testing and analysis, and corrosion investigations. Prior to working at MTI, from July 2002 through October 2007, I was employed by Uponor North America as Manager of Material Analysis. In that capacity I created and managed an analytical engineering services laboratory dedicated to material research and development, failure analysis and investigative chemistry. As Manager of Material Analysis I managed a team of six engineers and technicians responsible for process engineering, and I also managed the material analysis laboratory for Uponor which included services relating to failure analysis of metals and polymers, forensic chemistry, exidation/degradation analysis of polymers, corrosion studies, and material specification/design support.



- 2 During the period of July 2002 through October 2007 while I was the Manager of Material Analysis for Uponor, I conducted hundreds of failure analyses and generated reports discussing failures of metal and plastic products, including obtaining chemical analysis relating to the failure of metal components. My work in analyzing/evaluating failed metallic and plastic components has included visual inspection, stereo microscopy, metallography, radiography, Fourier transform infrared spectrometry, scanning electron microscopy, differential scanning calorimetry, and energy dispersive x-ray spectroscopy. Additionally, during the course of my employment with Uponor, I routinely sent metal products to testing laboratories for quantitative chemical analysis performed by optical emissions spectrometry. Well over 100 chemical analyses were requested. During the period of 2001 through July 2002 I was Director of Failure Analysis and Investigative Chemistry at Stock Twin City Testing in St. Paul, Minnesota. In that capacity. I managed a team of five metallurgists and chemists providing engineering consulting in failure analysis, metallurgical engineering, investigative chemistry, polymer analysis, and corresion investigations. During my employment at Twin City Testing, I continely reviewed and approved chemical analysis reports for metal components, where the chemical composition of the metal was determined by Optical Emissions Spectrometry and/or by Inductively Coupled Plasma Spectrometry. A copy of my Curriculum Vitae is attached hereto as Exhibit "A".
- 4. Prior to working at Stork Twin City Testing, I was employed by AlliedSignal Engines as a materials engineer performing failure analysis (including metallurgical analyses) of turboprop and gas turbine engine components in support of design, warranty administration, materials and process engineering, and flight safety. I performed numerous investigations which were attended by FAA and NTSB representatives including analysis of failure mechanisms for metal components of aircraft engines. During my employment with AlliedSignal Engines, I

periodically requested that metal samples be analyzed for chemical composition determined by inductively coupled plasma spectrometry, and I was responsible for interpreting the resulting data for conformance to specification.

- 5. During the course of my employment with Uponor, I participated in meetings with representatives of Unique Industrial Product Company, including Jay Milani, Pradesp Gupta and Hetal Bhysar in connection with failures of bress fittings and plastic swivel nots. These meetings took place between August 2006 and January 2007, and included a meeting in January 2007 attended by representatives of Duk San, which was involved in the manufacture of both the brass fiftings and plastic swivel nots involved in this claim.
- 6. Based upon my personal interaction with representatives of Unique and representatives of Uponor, I became familiar with the design and specifications for both the brass F1807 fittings and the plastic swivel mats.
- I aftended meetings with Unique's personnel and representatives of Duk San during which the parties discussed the specifications for the brass fittings and plastic swivel nuts, the source of the specification and design for those products as well as the testing and approval/rejection of those products. Unique's representatives supplied me with a design drawing for plastic swivel nuts which identified "Unique Industrial Product Company" as the designer of the swivel nut, and RTI as the "end user". A copy of that design drawing is attached hereto as Exhibit "2".
- 8. In various meetings with representatives of Unique from August 2006 through January 2007, Unique's representatives confirmed the brass fittings were distributed by Unique and never disputed that the swivel nuts had been distributed by Unique. Furthermore, at a meeting in January 2007, at which representatives of Duk San were presented, no issue was ever

raised as to whether the brass F1807 fittings and plastic swivel nuts had been manufactured by Duk San and distributed by Unique for Duk San.

- 9. A subsidiary of Uponor, Radiant Technology, Inc. ("R/II") initially purchased the fittings from Unique with the requirement that the fittings comply with ASTM Standard F1807. The applicable material standard referenced by P1807 is ASTM B283 which applies to copper and copper-alloy die forgings. The B283 Standard for chemical analysis, by its own terms, applies to finished product, not simply raw materials. For example B283 states that "one sample for chemical analysis shall be taken for each heat at the time of pouring or from semi finished or finished product". See ASTM B283, S3:3 a copy of which is attached hereto as Exhibit "3".
- 10. ASTM 19478 is not the standard test method for chemical analysis, but rather is a referee test method that can be invoked if the parties so agree in order to obtain test data when other test standards have resulted in disagreement. See ASTM B283 Section 13.1.1 and 13.1.2. In this case the parties never agreed to use B478 for chemical analysis testing. The chemical testing undertaken by Unique prior to Uponor filing suit, was performed by A&M Technical Services and Shiva Laboratories, both of which used the same methods as Uponor and, as is typical in the industry, make no reference to ASTM standards, including Standard E478. A copy of the A&M Technical Services. Inc. chemical testing data is attached hereto as Exhibit "4".
- 11. Duk San's quality assurance data reflects that only one sample per lot of brasa fittings was subjected to chemical analysis.
- 12. I examined and analyzed new brass fittings which were never installed. Those fittings, "out of the bag" showed evidence of micro-cracking. In light of these findings regarding new fittings that were never installed. I concluded that faulty installation was not a cause of failure in the brass fittings supplied by Unique.

- If. My conclusion that faulty installation was not a cause of failure in the brass fittings supplied by Unique was further supported by the history of fitting failures. A sudden rush of failures occurred in multiple states (where varying water chemistry conditions existed) during a narrowly defined time period, involving various plumbing contractors who had previous expedence successfully installing these components. This fact also undermines any question of installation error.
- 14. There was no reason to investigate the specific design of the brass fittings, as that design has been successfully used in the plumbing industry for a number of years without incident.
- Uponor was able to identify the brass fittings that were failing as having been supplied by Unique based upon the distinctive "US-PW" marking on those fittings. No company other than Unique had supplied fittings to Uponor with the "US-PW" marking and the failed fittings that were being returned by plumbers, wholesalers and developers exhibited the distinctive "US-PW" marking.
- 16. The F1807 brass fittings are not threaded and cannot be "over-tightened" during the course of installation.
- 17. With respect to plastic swivel muts, an installation error is not plausible as a failure mechanism where the socied muts contain substantial voids/pores in the walls of the plastic muts or a square thread root, as both of these phenomena relate to the manufacture of the plastic aut.
- 18. There is no reliable "test" to determine the "relative importance" of the perestry and design issues with the swivel nuts involved in this case. I assessed the relative importance of perestry and design/molding deficiencies in swivel nuts by examining the fractures and

observing that the initiation point for the fractures was associated with stress concentrations in the thread routes, and the fact voids/pores in the molded walls of the plastic nuts were bisected within the plane of fracture.

19. The presence of the voids/pores in the plastic nots substantially diminished the structural integrity of the swivel not walls, thereby significantly increasing the probability of failure, even without the presence of the improper thread root geometry. In some cases the voids/pores consumed 50% of the wall thickness of the plastic nuts.

Condia & South

FURTHER AFFLANT SAYETH NOT.

Subscribed and Sworn to before the this 30 day of March, 2009.

Clana GBelk
NOTARY PUBLIC

My Commission Expires:

617 2011

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

Plaintiffs,

(FIRST) AMENDED COMPLAINT IN CLASS ACTION

v.

Uponor, Inc., successor to Uponor North America, Inc., and Radiant Technology, Inc.,

Defendants.

EXHIBIT C

THOMAS W. EAGAR, Sc.D., P.E. ROOM 4-136 MASSACHUSETTS INSTITUTE OF TECHNOLOGY CAMERIDGE, MA 02139-4307 617-253-3229 FAX 617-252-1773

October 28, 2008

Fisher Kanaris 200 South Wacker Drive 33rd Floor Chicago, Illinois 60606

Attention:

Howard Lieber

RE:

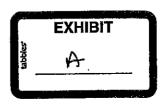
Uponor Brass Fittings for PEX Tubing

Dear Mr. Lieber,

At your request, I have investigated a number of field failures of brass fittings distributed by Uponor. The list of samples which I inspected are given in Appendix A. It was reported that there have been over sixty failures of fittings over less than a year and that additional field failures were reported thereafter.

My investigation has included the following:

- Visual inspection of both field failures and exemplar fittings using a stereomicroscope. Selected samples were also examined in the Scanning Electron. Microscope.
- 2. Chemical analysis of 13 exemplar fittings as listed in Appendix B.
- 3. Review of ASTM F1807, B16 and B283.
- 4. Bend and fracture tests on selected exemplars.
- 5. Metallography and microhardness of both selected field failures and exemplar fittings.
- 6. Microfocus x-rays of exemplar fittings.



Howard Lieber October 28, 2008 Page Two

7. Depositions of:

William Marshall, July 8, 2008 William Marshall, July 9, 2008 Jugal Malani, July 9, 2008

- 8. Uponor Summary of Abbreviated Investigation, July 13, 2006, RMA: 717447
- 9. Uponor Summary of Investigation Unique Brass Fittings Undated Bates Numbers U108452 to 08472
- 10. NSF/ANSI Standard 14 Bates UI08070 to 08079
- 11. Uponor Notice of Revision UI02098 to UI02102
- 12. Emails:

a) from Mark Dubanoski to Anders Tollsten.

January 11, 2007

b) from Loc Hoang to John Liebelt, 12/01/2006.

13. Documents:

U108062 to U108069 U108434 to U108451 U108474 to U108495 U100689 to 00693

UI00944 UI00714 UI00899-00900 UI01261 to 01263

Deposition Exhibits 45 – 51 Deposition Exhibits 30 – 36

UI01016 to 01018

14. Documents:

Unique/Uponor 000095 to 000168

Based upon this investigation, I have made the following observations and I have formed the following opinions based upon a reasonable degree of engineering certainty.

Each of the field failures fractured due to stress corrosion cracking. These cracks
were initiated by cracks on the inside wall of the fittings. This inside wall is a
machined (drilled) surface; however, the machined surfaces of both fractured and
new exemplar fittings showed severe smearing and surface cracking. Such
smearing and surface cracking can be produced by a number of factors, including
inter alia dull tools, excessive tool feeds and speeds, and improper alloy
composition or microstructure.

Howard Lieber October 28, 2008 Page Three

- 2. The fittings made from wrought material were specified as C36000 brass alloy. The forged fittings (elbows, tees and the like) were specified as C37700 alloy. The chemical analyses (performed by Inductively Coupled Plasma Spectrocopy except for the oxygen content) show that the lead analysis of the C37700 alloy was consistently outside the ASTM B283 specification range. Some of the iron analyses were above the B283 maximum value. Some of the C36000 alloy samples also failed to meet the chemical requirements for iron content.
- 3. The bend tests showed significantly different behavior between the C36000 couplings and the C37700 forgings. The couplings, which were presumably machined from bar stock could sustain a 2T bend of 180°. The C37700 forgings fractured with low ductility at a considerably smaller angle and a larger bend radius. Observation of the fracture surface of the C36000 alloy in the Scanning Electron Microscope, revealed ductile dimples. The C37700 fractures exhibited little evidence of ductile dimpling.
- 4. Microhardness tests across the thickness of an exemplar sample LL-1 indicated a Vicker's hardness on both machined surfaces of 145 to 152 with a core hardness of 115. This higher surface hardness is consistent with the smearing and cracking observed on the machined surfaces. Such smearing and higher hardness will create surface residual stresses on the fitting.
- 5. Observation of the lead particle size distribution using both the microfocus x-ray and metallography, showed a 20 to 100 micron lead particle size in the C36000 alloy as expected for free machining brasses. The C37700 forgings had no larger lead particles; the entire lead distribution was a fine dispersion of 1 to 3 micron particles. Such a fine dispersion of second phase particles results in a substantial loss of ductility [see W.A. Backofen, Deformation Processing, Addison Wesley, 1972, p.247],
- 6. The fine dispersion of lead particles can be explained by reference to the copper-zine-lead ternary phase diagram [see, Handbook of Ternary Alloy Phase Diagrams, Volume 8, ASM International, 1995, p.9937]. As these brasses are heated to temperatures above 700°C, the lead will dissolve in the brass. If the alloy cools too quickly, the lead will re-precipitate as a fine dispersion.

Howard Lieber October 28, 2008 Page Four

- 7. Mr. Marshall indicated that the brass fittings would fail the dimensional checks 1 to 2 percent of the time [Marshall deposition, 8 July 2008, p.44]. Uponor's internal testing also reflected failure of dimensional checks [see the email referred to in 12(b) above). These dimensional discrepancies, plus the failure to meet the chemical specifications (see paragraph 2 above as well as testing performed by Stork Labs) indicates that a substantial number of these fittings did not meet the ASTM F1807 specifications.
- 8. Mr. Malani indicated that the Korean manufacturer used a lead leaching process to remove lead from the surface [Mulani deposition, p.22]. Such leaching of the lead would produce notches in the surface. These notches, combined with the surface residual stresses, will contribute significantly to the formation of stress corrosion cracking both prior to service and during service of these fittings:
- 9. Although Dr. Hays' report indicates that the failures occurred due to fatigue, I see no evidence of fatigue failure on the fracture surface of the brass fittings. In addition, estimation of the cyclic stresses due to "the pulsating flow of the water throughput," indicates levels of less than 100 psi. These cyclic stresses are too low to cause fatigue in brass alloys such as these fittings. Thus, failure due to fatigue is highly improbable.
- 10. Dr. Hays' report indicates that the neutral axis of the fitting is the mid-thickness of the tube wall. This is incorrect. For a tube, the neutral axis is at the axial center of the tube. Use of the neutral axis as selected by Dr. Hays will result in huge errors in the calculated bending stresses.
- 11. The failures of these fittings are related to manufacturing deficiencies (rough machining, compositional variations, dimensional deviations, aggressive leaching) and are not due to deficiencies in design of the fittings. Detection of such manufacturing defects is the responsibility of both the manufacturer and the distributor (Unique). The manufacturer is responsible for quality control continuously throughout the manufacturing process. The distributor or reseller (Unique) is responsible for quality assurance. Such quality assurance requires periodic quality audits of the manufacturing facility as well as random testing of samples of the received products to ensure that the specifications are being met. Unique acknowledges that such quality assurance procedures were not in place and incoming material was merely trans-shipped to Uponor.

Howard Lieber October 28, 2008 Page Five

The distinction between design and manufacturing applies to the approval of NSF as well. NSF approves designs and materials, but NSF does not certify or audit the manufacturing process to ensure that a consistent product quality is being produced. Stated simply, NSF approval certifies the design but does not provide manufacturing quality control or even quality assurance. NSF approval indicates that the design meets a particular specification.

Based upon the foregoing, I have concluded to a reasonable degree of engineering certainty that these failures occurred due to stress corrosion cracking (SCC). The cause of the SCC was multi-dimensional including the high surface residual stresses and pre-cracking. These high residual stresses and pre-cracks were due to improper machining and lead leaching of the fittings. Many of the fittings did not conform to ASTM F1807, as required. The failure of the fittings to comply with F1807 also played a role in the process leading to SCC. Thus, these failures result from manufacturing defects in the fittings.

Based upon this investigation, it is my opinion that it was appropriate for Uponor to reject fittings which did not conform to the ASTM F1807 specification in terms of chemical composition and dimensions. Any seller of fittings represented to conform to the ASTM specification, which seller knew that the fittings did not conform, would be making a serious misrepresentation of the product. In addition, the smeared metal due to improper machining meant that these fittings were not of the standard of quality expected of parts manufactured from free cutting brass. Free cutting brass should produce one of the cleanest and smoothest and least deformed machined surfaces.

Sincerely yours,

Thomas W. Eagar Thomas W. Eagar

APPENDIX A

1. New fittings rejected by Uponor for non-conforming chemistry (52 fittings total):

a.	P4516375-P119	(2 fittings)
b,	P4515050-T1	(2 fittings)
e.	P4845050-T1	(2 fittings)
đ.	P4175050-T1	(2 nuts)
e,	P4525050-T1	(2 fittings)
f.	P4376375-P119	(2 fittings)
g.	P4503850-P119	(2 fittings)
ĥ.	P4175050-P119	(2 fittings)
i.	P4705050-P119	(2 fittings)
j.	P4506375-T3	(2 fittings)
k .	P4703838-T3	(2 fittings)
1.	P4545050-P119	(2 fittings)
m.	AA-1-Loose/P4707555	(2 fittings)
n.	CC-1-Loose/P4710500	(2 fittings)
0,	EE-Loose/P4710500	(5 fittings)
p.	EE-1-P4710500	(5 fittings)
q.	JJ-1/P4705050	(5 fittings)
r.	KK-4/P4705050	(5 fittings)
S.	MM-1/P4705050	(1 fitting)
t.	NN-3-Loose/P4707555	(3 fittings)

- 2. Field-returned fitting that Uponor destructively evaluated:
 - a. MA00507
- 3. Field-returned fractured fittings in the as-received condition:
 - a. MA00492
 - b. MA00523
 - c. MA00539
- 4. New fittings (never installed) returned from distributors who have had fittings crack in the field:
 - a. LL-Loose (5 fittings)
 - b. LL-1 (5 fittings)
 - c. JJ-1 (5 fittings)

- 5. Field-returned fittings received March 16:
 - a. MA00506
 - b. MA00493
- 6. 25 -P4710500 elbows from Ryan Homes
- 7. Received March 22:
 - a. LL-1 (5 fittings)

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

Plaintiffs,

(FIRST) AMENDED COMPLAINT IN CLASS ACTION

v.

Uponor, Inc., successor to Uponor North America, Inc., and Radiant Technology, Inc.,

Defendants.

EXHIBIT D

How does the Brass

ASTM F1960 Standard Uponor ProPEX® Fitting System

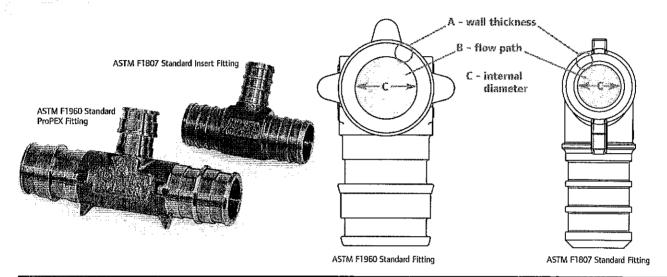
Uponor

PLUMBING SYSTEMS
FITTING SYSTEMS

PACTISHEET I

compare with

ASTM F1807 Standard Insert Fittings?



	ASTM F1960 Standard Uponor ProPEX® Fitting System		ASTM F1807 Standard Insert Fittings		Uponor ProPEX Advantages
Α	Thicker wall results in lower overall stress for superior performance in all water environments	½" fitting = 0.057" wall thickness1" fitting = 0.072" wall thickness	Thinner wall offers less resistance to stress and corrosion	$\frak{\chi}$ " fitting = 0.028" wall thickness 1" fitting = 0.041" wall thickness	光" fitting features 103% greater wall thickness 1" fitting features 75% greater wall thickness
B	Larger cross- sectional area provides better flow	½" fitting = 0.112 sq. inches 2.9 gpm at 8 ft./sec. 1" fitting = 0.496 sq. inches 12.4 gpm at 8 ft./sec.	Smaller cross- sectional area restricts flow	½" fitting = 0.096 sq. inches 2.4 gpm at 8 ft./sec. 1" fitting = 0.396 sq. inches 9.9 gpm at 8 ft./sec.	光" fitting offers 20% higher gpm 1" fitting offers 25% higher gpm
C	Greater minimum internal diameter (i.d.)	½" fitting = 0.378" 1" fitting = 0.795"	Smaller minimum i.d.	½" fitting = 0.350" 1" fitting = 0.710"	が fitting has 8% larger minimum i.d. 1" fitting has 12% larger minimum i.d.
	Large offering of engineered plastic (EP) fittings available		Limited offering of plastic fittings available		Plastic fittings more resistant to aggressive water environments compared with metal fittings
	Works with the shape-memory properties of Uponor PEX-a tubing Go/no-go gauges are never required Cannot be dry fit — never a question if the connection is made		Does not take advantage of the properties of PEX-a tubing		Provides a stronger, more reliable connection
			Requires testing every copper crimp fitting connection with a go/no-go gauge		Saves valuable installation time
			Can be dry fit — could result in uncrimped connections		Never have to second-guess whether a connection is complete

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

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Defendants.

EXHIBIT E



P.O. Box 240384 · St. Paul, MN 55124 · 888.311.9582 · Fax 877.899.9589

www.rtiplumbina.com

October 14, 2008

VIA U.S. MAIL

[Name] or Current Owner [Street Address] [City, ST, Zip

Re: IMPORTANT INFORMATION REGARDING YOUR PLUMBING SYSTEM PLUMBING REMEDIATION PROGRAM

Dear [Name] or Current Owner:

We recently discovered that the plumbing of several homes in your neighborhood is susceptible to premature deterioration that may result in leaks around connections in the piping. The plumbing system at issue is the RTI Plumb-PEX Octiker Clamp system. As we investigated these issues, we determined that other homes in the Las Vegas area with similar plumbing systems could be at risk for leaks in the future. Our records indicate that this plumbing system may have been installed in your home.

This letter is provided to inform you of the risk that the plumbing system in your home may be susceptible to future leaks, as well as to convey our offer to perform repairs to your plumbing system at no cost to you.

We have discussed this matter with your homebuilder, D.R. Horton, and D.R. Horton fully supports RTI's efforts to remedy this situation for the benefit of its customers. D.R. Horton is involved and working with us on this offer and in our remediation program.

We want you to know that RTI stands behind its products, and an important goal to us is to minimize your inconvenience as we complete these repairs. For this reason, we have selected an experienced repiping specialist to perform the repairs in your home. We have great confidence in this contractor in that they have completed several thousand "repiping" repairs for homeowners in several states, and the company has a long record of customer satisfaction. The contractor offers a comprehensive, stream-lined protocol for repiping your home. For most homes, the entire repiping procedure, including drywall, texture and paint repairs, takes approximately one week. In most cases, water will be turned off for a total of only 8 to 10 hours. This minimizes interruptions to your daily schedule. The contractor is also committed to keeping your home clean throughout the process—about one-third of the job schedule is dedicated to this objective.

October 14, 2008 Page 2

When the work is complete, your new plumbing system will carry a new 25 year warranty that is fully transferable to future owners.

We invite you to contact us either to obtain further information regarding the plumbing remediation program or to set up an appointment to begin the repipe of your home. You may contact us through any of the following methods: (1) fax the enclosed Homeowner Request Form to 1-877-899-9589, (2) mail the enclosed Homeowner Request Form to: RTI Plumbing Systems, P.O. Box 240384, St. Paul, MN 55124; (3) send an email to RTI at info@rtiplumbing.com, or (4) call our toll free number at 1-888-311-9582.

Please include in any communication to us your name, address, telephone number, and whether you:

- (1) want additional information regarding the repair process, or
- (2) want to set up an appointment to begin the repipe of your home.

We will contact you within 21 days either to provide you with the information you requested, or to schedule a time for the repiping specialist to walk through your home with you to determine if you have a RTI Plumb-PEX Octiker Clamp system and schedule an appointment for the repairs if necessary.

If you experience plumbing leaks that require immediate attention, please contact RTI directly at 1-888-311-9582 for information on who to contact to inspect and repair your home. Your home will be inspected promptly and repairs completed at the earliest possible date, usually five days or less from the time of inspection.

RTI sincerely appreciates your future cooperation and patience while we work to remedy this situation.

Sincerely,

RTI Plumbing Systems

RTI Plumbing Systems Plumbing Remediation Program Homeowner Request Form

[]	Yes, I would like further information regarding the plumbing remediation program. At this time, I am unsure whether I am interested in having repairs performed to my home			
ľ	j	Yes, please contact me to set up an appointment to begin the repipe of my home			
[]	No, I am not interested in having repairs performed to my home			
N	ame	(printed):			
A	ddre	ess:			
T	elep	hone Number:			

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

Plaintiffs,

(FIRST) AMENDED COMPLAINT IN CLASS ACTION

٧.

Uponor, Inc., successor to Uponor North America, Inc., and Radiant Technology, Inc.,

Defendants.

EXHIBIT F

uponor

June 29, 2007

Latitude Subrogation Services, LLC

ATTN: Brenda Tracy

1760 S. Telegraph Road, Suite 104

Bloomfield, MI 48302

RECEIVED

JUL 0 5 2007

Latitude Subrogation Services

Re:

Our File No.:

Claimant: 1

Date of Loss: Latitude Claim No.: RMA 717775

North Anoka Plumbing Multiple

67-01249-06, 67-01248-06, and 67-00501-06

In response to your letters regarding the above referenced matter, we have determined that we are not the manufacturer of the part submitted to us under RMA 717775, and as such, the claim should not be sent to us.

Please be advised that the manufacturer of this product is Unique Industrial Product Company. Unique's direct contact information is as follows:

Unique Industrial Product Company

ATTN: Jay Malani

12600 Cardinal Meadow Sugar Land, TX 77478 Office: 888-999-3588

Please be advised that the defective part sample was returned to Unique Industrial Products Company on August 2, 2006. We have now closed our file on this matter, but please do not hesitate to contact me should you have any questions or concerns.

Sincerely;

Stacey Pix Claims Coordinator

Uponor North America

5925 148th Street W. Apple Valley, MN 55124

Tel: (800)321-4739 Fax: (952)891-1409

Web: www.uponor-usa.com

John and Helen McGregor and Auto-Owners Insurance Company, as subrogee of North Anoka Plumbing, on behalf of themselves and all others similarly situated, Court File No. 09-1136 (ADM/JJK)

Class Action

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Uponor, Inc., successor to Uponor North America, Inc., and Radiant Technology, Inc.,

Defendants.

EXHIBIT G



UNIQUE INDUSTRIAL PRODUCT COMPANY

EEB 0 1 5008

January 29, 2008

Latitude Subrogation Services 1760 S. Telegraph Rd., Suite 104 Bloomfield Hills, MI 48302 Claim Number: 67-00560-07

On Behalf of North Anoka Plumbing

Date of Loss: March 5th, 2007 Type of Loss: Water Damage Total Damages: \$3,570.71

Dear Brenda Tracey,

In reference to your letter dated July 19th, 2007, you have asked for subrogation on your client North Anoka Plumbing in the amount of \$3,570.71.

We feel that we should inform you that the alleged failed part sold by our company was an approved part and designed by Uponor. We simply copied Uponors' sample and received approved and the go ahead from them to make the parts.

At this point, we believe that you should discuss this matter further with Uponor. We hope that you come to a resolution soon.

Thank you and best regards,

Shannon Davison

Assistant Sales Manager